

WHAT IS CLAIMED IS:

1. A circuit device manufacturing method comprising:
forming conductive films that are laminated in multiple
layers with interlayer insulating layers interposed in between;
5 forming a conductive wiring layer by selective removal
of the conductive film at a top surface;
forming through holes in the interlayer insulating layers
and forming connection means in the through holes to electrically
connect the conductive wiring layer with the conductive film
10 at a rear surface;
affixing and electrically connecting circuit element to
the conductive wiring layer;
irradiating plasma onto the conductive wiring layer,
including the circuit element; and
15 forming a resin layer so as to cover the circuit element.
2. The method of Claim 1, wherein the conductive wiring
layer is covered with resin while exposing locations that are
to become pad.
3. The method of Claim 2, wherein in the step of irradiating
20 plasma, the plasma is irradiated onto a top surface of the resin
as well to roughen the top surface of the resin while a voltage,
which is charged up in the resin, is released from the conductive
wiring layer and via the conductive films.

4. The method of Claim 1, wherein connection means, comprising a plating film, are formed in the through holes to electrically connect the conductive wiring layer and the conductive film.

5 5. The method of Claim 1, wherein the plasma irradiation is carried out using oxygen gas or ozone.

6. The method of Claim 1, wherein the plasma irradiation is carried out using an inert gas, such as argon, neon, or helium.

7. The method of Claim 6, wherein in the process of
10 irradiating the plasma using argon, ion energy of argon is in a range of 40eV to 100eV.

8. The method of Claim 1, wherein after performing the plasma irradiation using oxygen gas, plasma irradiation using an inert gas, such as argon, neon, or helium, is carried out.

15 9. The method of Claim 1, wherein the conductive film is formed of a metal having copper as a principal material.

10. The method of Claim 1, wherein the circuit element is semiconductor element that is electrically connected via metal wires to the conductive wiring layer.

20 11. The method of Claim 1, wherein the circuit element is semiconductor element that is mounted in a face-down manner.

12. The method of Claim 11, wherein the circuit element is electrically connected to the conductive wiring layer via

soft solder or other solder material.

13. The method of Claim 1, wherein after the plasma irradiation, the conductive film at the rear surface is removed selectively to form a conductive wiring layer.

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